NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

MULCHING
(Acre)
CODE 484

DEFINITION

Applying plant residues or other suitable materials to the soil surface.

PURPOSES

To conserve moisture; prevent surface compaction or crusting; reduce runoff and erosion; modify surface temperatures, control weeds; help establish plant cover and reduction of particulate matter emissions into the air.

CONDITIONS WHERE PRACTICE APPLIES

On soils subject to erosion; on areas where traffic may cause compaction, erosion, or airborne emissions, where conserving soil moisture is desirable and on soils that have a low infiltration rate.

CRITERIA

Erosion Control on Critical Areas

When mulching with straw, use at least 4,000 pounds of cereal grain straw or grass hay per acre evenly distributed over the area to be treated and anchored sufficiently to hold it on the site.

When mulching with wood fiber, use at least 2,000 pounds of wood fiber mulch per acre.

Other Applications

When mulching with straw, use at least 2,000 pounds of cereal grain straw or grass hay per acre evenly distributed over the area to be treated and anchored sufficiently to hold it on the site

When mulching with other wood products (chips, bark, shavings) or other material, they must be applied in an amount that will provide at least 80 percent ground cover.

When mulching with gravel or other inorganic material for permanent erosion control, they must be applied in sufficient amounts to provide 90 percent ground cover.

All straw mulch materials will be acceptable to the County Agricultural Commissioner, per California Food and Agriculture Code Section 5101 and 5205.

Protection or Soil Improvement

The mulch material used will be evenly applied in sufficient amounts to achieve the results contemplated when used alone or in combination with other practices.

When waste materials with potential for polluting surface waters are used for mulching (animal manures, sewage sludge, wastes from food processing, other similar materials) care will be taken to assure that runoff from the area will not enter streams, lakes, ponds, or reservoirs and that nitrate leaching will not be a problem. Measures will also be taken to prevent mulch from washing away due to concentrated flows, rainfall, or irrigation.

CONSIDERATIONS

Common mulch materials available include barley oats, rice, and wheat straw. Rice straw tends to persist longer. Most hay will decompose faster than barley or wheat.

Many hillside producers often "winterize" their steep farm roads with straw at the beginning of the rainy season and then restrict vehicle traffic.

Disturbed construction sites (incl. building pads, mass grading, house pads, rough grading projects) often use mulches to comply with their conditional use permit to comply with their storm water pollution prevention plan, grading ordinance, erosion control plan or conditional use permit.

Barley and wheat straw usually contains 10 to 15 pounds/acre of seed. The resulting green growth does

not interfere with most intended uses or future landscaping.

Use of wheat straw usually results in less volunteer grain when compared to barley straw.

Rollers and crimpers can be pulled on slopes up to 3:1. Where there is access, equipment can be winched up and down steeper slopes. Tackifiers can be utilized to anchor when equipment cannot be used on the site.

Use 75 feet as the effective range for straw blowing equipment.

Use 125 feet as the effective range for hydroseeders. With the use of a 100-foot hose the range can be extended up to 200 feet.

Many organic waste materials are suitable for use as mulches. These materials include wood bark, chips, shavings, and sawdust: animal manures; rice hulls; and some food processing plant wastes.

Demand for mulching as a method of protecting steep areas disturbed by construction (road sides, ditch banks, building sites, dams, etc.) has led to development of equipment for applying mulches and a number of products to hold mulching materials in place.

Mulching application equipment includes blowers, hydro applicators.

Manufactured mulches include wood-fiber and paper mulch.

Anchoring

Anchoring of mulches can be accomplished by using the following methods:

Netting, tackifiers, matting: hand, roller, or crimper punching and disk-type straw punchers.

Netting to anchor mulches is made from plastics, paper, jute, and burlap. They are anchored with staples of various materials.

Several liquid "tackifiers" that can be mixed with water and sprayed on fiber mulches to bind them together are available. These “tackifiers” will be compatible with the mulch applied and in sufficient amount to adequately bind the materials together for the intended life of the practice.

Water Quantity

Mulching is the application of some material around plants and crops, and on areas which have been disturbed and require temporary protection. Mulching is used to control weeds, surface temperatures, erosion, and to retain moisture.

Mulching may improve microbial action in the soil surface, may improve infiltration, and may reduce runoff, erosion, and evaporation. Increased infiltration may result in soluble chemicals moving below the root zone.

There is a potential for changes in plant growth and transpiration because of changes in the soil water volume.

Cultural Resources Considerations

Determine if installation of this practice with any others proposed will have any effect on any cultural resources. NRCS’s objective is to avoid any effect to cultural resources and protect them in their original location. GM 420, Part 401, the California Environmental Handbook and the training for the California Environmental Assessment Worksheet specify how the NRCS must account for cultural resources. The Field Office Technical Guide, Section II contains general information, with Web sites for additional information, about cultural resources. The Environmental Handbook is online at www.ca.nrcs.usda.gov/rts/rts.html.

Endangered Species Considerations

Determine if installation of this practice with any others proposed will have any effect on any federal or state listed Rare, Threatened or Endangered species or their habitat. NRCS's objective is to benefit these species and others of concern or at least not have any adverse effect on a listed species.

If the Environmental Evaluation indicates the action may adversely affect a listed species or result in adverse modification of habitat of listed species which has been determined to be critical habitat, NRCS will advise the land user of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the landowner selects one of the alternative conservation treatments for installation; or at the request of the

landowners, NRCS may initiate consultation with the Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game. If the Environmental Evaluation indicates the action will not affect a listed species or result in adverse modification of critical habitat, consultation generally will not apply and usually would not be initiated. Document any special considerations for endangered species in the Practice Requirements Worksheet.

Some species are year-round residents in some streams, such as, freshwater shrimp. Other species, such as steelhead and salmon, utilize streams during various seasons. Be aware that critical periods, such as spawning, eggs in gravels, and rearing of young may preclude activities in the stream that may directly affect the stream habitat during those periods. For example there should be no disturbance of stream gravel beds that may have eggs in them. That could include any equipment in the stream or even walking in the stream or work upstream that may result in sediment depositing in the gravel beds. Document any special considerations for endangered species in the Practice Requirements Worksheet.

Water Quantity

Mulching is the surface application of plant residues or other suitable materials on the soil surface. It includes the application on areas which have been disturbed and require temporary protection. Mulching is used to control weeds, help establish plant cover, control surface temperatures, reduce erosion, reduce particulate matter and to retain moisture.

Mulching may improve microbial action on the soil surface, may reduce runoff, erosion and evaporation. Increased infiltration may result in soluble chemicals moving below the root zone.

There is a potential for changes in plant growth and transpiration because of changes in the soil water volume.

Water Quality

This practice may reduce the delivery of sediment and related chemicals to surface water by reducing runoff and erosion. The temperature of the surface runoff may be lowered.

PLANS AND SPECIFICATIONS

Plans and Specifications shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

Include the amount and type of mulch needed on the Practice Requirement Sheet along with all details needed for proper application.

OPERATION AND MAINTENANCE

The owner or operator will be responsible for operating all equipment safety and maintaining this practice.

Mulch will be replaced as needed to maintain the amount of mulch during the required period.

The area mulched will be inspected after significant events to ensure the mulch is adequate for the intended purpose.

REFERENCES